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**PATENT SPECIFICATION**  
**620,477**

Application Date: June 7, 1945.

No. 14326/45.

Complete Specification Left: Dec 1, 1945.

Complete Specification Accepted: March 25, 1949.

Index at acceptance:—Classes 27, H3; and 132(ii), H6(c3: f7: f9).

**PROVISIONAL SPECIFICATION**

**Improvements in, or relating to, Amusement Machines**

I, ROBERT WILLIAM AMAC, a British Subject, of 18A, Soho Hill, Birmingham, 19, do hereby declare the nature of this invention to be as follows:—

5 This invention has reference to amusement machines which are more particularly adapted for use in premises or localities frequented by the general public or a portion of the general public.

10 The objects of the present invention are to provide a machine which is simple and economical in construction, is easy to operate, and is neat and attractive in appearance.

15 In accordance with the said invention a machine comprises one or more tracks, each track being inclined or tilted out of the horizontal and being provided with an aperture in one side thereof and at a distance from its lower end, and a hammer or equivalent means located at the said lower end for imparting a blow to a coin or other circular article fed to the track so as to impel the said article upwardly of the track toward the aperture.

25 The arrangement is such that when a circular article is fed to a track, it gravitates to, and comes to rest at, the lower end thereof. It may then be impelled upwardly of the track by a hammer blow and, if the blow is of the requisite strength to cause the article to reverse its direction of travel at the aperture, then the article passes through the aperture instead of rolling back to the lower end of the track. On the other hand, if the hammer blow causes the reversal of travel to take place before or after the aperture is reached, then the article automatically returns to the said lower end preparatory to receiving a further hammer blow.

45 Preferably the machine comprises a plurality of tracks and the aperture in each track opens into a passage or chute leading to another track or other predetermined destination for the article.

50 Preferably also, and more particularly when a coin or other disc like article is to be impelled along the track or tracks,

the apertured side of each track is of appreciable depth and is inclined out of the vertical away from the length of the track, means being provided to ensure that each disc like article fed to the track is caused to be so supported edgewise thereon that it tilts against the said enclosed side. The angle of inclination of the apertured side should be large enough to ensure that a disc like article impelled along the track remains in contact therewith but not too large as to prevent the article passing the aperture during its upwards and return travel along the track should the blow imparted thereto be too great.

70 The tilted edgewise location of a disc like article upon a track may be ensured by providing the machine with a separate supply passage to each track and so arranging each passage that it opens into its complementary track vertically above the upper surface of the apertured and inclined side and intermediate the aperture and the lower end of the track.

75 In a typical application of the invention, the machine may comprise a plurality of superimposed inclined tracks which are arranged parallel to one another upon one side of a backboard with their deeper apertured and inclined sides adjacent the track-supporting side of the board. The board may be housed within a casing with its track-supporting side adjacent to a window therein so that any article impelled along a track is visible through the said window.

80 The deeper side of each track, except the uppermost, may extend behind and in spaced relationship to, the deeper side of the adjacent upper track and a ledge or shelf may be provided in the space between the overlapping sides and at or below the level of the bottom of the aperture in the upper of the two overlapping track sides. Thus a coin passing through the said aperture rolls on to the said shelf and is maintained in its edgewise disposition by the overlapping track sides. The shelf may be inclined at the 100

[Price 2/-]

same angle from the horizontal as the track floors and may be provided with an opening intermediate the aperture in the deep side of the lower track and the lower end of the latter.

The machine may comprise a supply chute which opens vertically above the upper face of the inclined deep side of the uppermost track and which may be adapted to deliver a coin inserted into the machine direct from an inlet slot to the said track.

The aperture in the deep inclined side of the lowermost track may open into a chute adapted to deliver the coin out of the machine.

The apertures in the deep sides of the several tracks may be located at different distances from the lower ends of the latter; preferably the said distance increases from a minimum for the uppermost track to a maximum for the lowermost track and the upper ends of the tracks may be open so that if the blow imparted to the coin is sufficiently great, the coin may be projected out of the upper end of the chute and may fall into a collecting box in the bottom of the casing so that it is lost to the player. Thus as the coin passes from an upper track to a lower track, the skill required on the part of a player to cause it to pass through each successive aperture, is progressively increased.

Whereas the depth of the aperture in each of the deep inclined track sides must be at least sufficient to enable a coin to pass therethrough edgewise, the aperture may be of any desired width greater than the radius of the coin. Consequently, the strength of the blow required to cause the coin to pass through the aperture must be such that a reversal of the direction of travel occurs when at least that half of the coin which is adjacent the lower end of the track, overlaps the aperture.

The edge of each aperture furthest from the lower end of the complementary track, may be formed on a radius so as to facilitate the entrance of the coin into

the aperture and so as to decrease the possibility of the said edge obstructing the blow-driven travel of a coin up the said track.

If desired, and to enable the tracks to be cleaned easily and quickly, the base and shallower side of each track may be formed as a composite unit which may be detachable from the backboard; also, the said backboard may be hingedly mounted within the casing so that, after removal of the back of the casing, the backboard may be swung outwardly to expose the removable track units.

Any suitable mechanism may be adopted for imparting blows to a coin in any one of the tracks; for example, a spring loaded lever may be carried within and to one side of the casing, the said lever being provided with a plurality of studs equal in number to the number of tracks, which project into proximity to the lower track ends and against each of which the coin in use may come to rest as it is fed to the successive tracks. The lever may be manually actuated by a spring loaded crank which passes through the front of the casing and which is provided with an operating handle on its outer end.

The lever may be associated with mechanism, visible through the window, for counting the number of blows imparted to a coin from the time it is fed into the uppermost track until it enters the discharge chute or is impelled beyond the open upper end of a track.

Alternatively, instead of arranging for a coin to be fed through the supply chute to the uppermost track, the machine may include coin actuated mechanism which releases and supplies to the said track a predetermined number of discs which may be driven in succession along the tracks.

Dated this 6th day of June, 1945.

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## COMPLETE SPECIFICATION

### Improvements in, or relating to, Amusement Machines

I, ROBERT WILLIAM AMAC, a British Subject, of 18A, Soho Hill, Birmingham, 19, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention has reference to amusement machines which are more particularly adapted for use in premises or

localities frequented by the general public or a portion of the general public.

The objects of the present invention are to provide a machine which is simple and economical in construction, is easy to operate, and is neat and attractive in appearance.

In accordance with the said invention, a machine comprises a plurality of channel-like tracks, each of which is

inclined to the horizontal and is visible through a window in the front of the machine, the back wall or side of each track being substantially deeper than the front wall or side thereof, and being provided, at a distance from the lower track end, with an aperture which opens into a passage located behind the said back wall or side to establish communication in the case of each track except the lowest, between the track and a lower track, and in the case of the lowest track, with a discharge chute, a manually actuated hammer or equivalent device being provided at the lower end of each track for imparting a blow to a coin or other circular article fed edgewise to the track so as to impel the said article upwardly of the track towards the aperture.

The arrangement is such that when a circular article is fed edgewise on to a track, it rolls automatically to, and comes to rest at, the lower end thereof. It may then be impelled upwardly of the track by a hammer blow and, if the blow is of the required strength to cause the article to reverse its direction of travel at the aperture in the deep back wall or side of the track, then the article passes through the aperture and along the complementary passage instead of rolling back to the lower end of the track. On the other hand, if the hammer blow causes the reversal of travel to take place before or after the aperture is reached, then the article automatically returns to the said lower track end preparatory to receiving a further hammer blow.

Preferably the apertured rear wall or side of each track is inclined out of the vertical rearwardly of the track, means being provided to ensure that each circular article fed to a track is caused to be supported edgewise on the track base and to be tilted automatically against the said apertured side. The angle of inclination of the apertured side should be large enough to ensure that a circular article impelled along the track remains in contact with the front face of the said deep apertured side, but not so large as to prevent the article passing the aperture during its upwards and return travel along the track should the blow imparted thereto be too great.

Preferably the floor of the passage behind the deep back wall or side of each track is also inclined to the horizontal and has an opening therein, the said opening being formed between the side aperture and the lower end of the passage and being located within and forwardly of the front face of the inclined deep side of the next lower track so that when a coin or other circular article is caused to pass edgewise

through the aperture in any track side, it rolls automatically along the corresponding passage to and through the opening in the passage floor into the next lower track, the edgewise disposition of the coin or article being maintained by the rearward inclination of the track wall or side of the said lower track.

In order that the invention may be more readily understood and carried into practice, reference will now be made to the accompanying drawings, wherein:—

Figure 1 is a perspective view, taken from the front of the machine;

Figure 2 is an elevation of the rear of the machine, the rear cover plate having been removed to expose the internal components and showing the operating handle actuated to load the hammer device;

Figure 3 is a section taken along the line *a—*a**, Figure 2, the operating handle and the hammer device being shown in their normal, at rest, position;

Figure 4 is a section through the coin track assembly, taken along the line *b—*b**, Figure 2.

The machine shown in the said drawings comprises a casing 1, having a window 2 in the front thereof to expose to view a track unit 3. The said unit occupies only a portion of the window area and is surmounted by a board 4 whereon advertising or other matter may be printed and which serves as a screen for the internal components of the machine. An operating handle 5, a coin receiving slit 6, and a coin discharge aperture 7, are also provided in the front of the casing. The aperture 7 is formed in a door or the like 8 provided in the casing below the window and permitting, when unlocked, access to the interior of the casing. A tray 9 is mounted on the back of the door behind the aperture.

The track unit 3 is hinged about one edge thereof internally of the casing so that it may, as and when desired, be swung away from the window for inspection and/or removal; normally the said unit is retained in spaced and adjacent relationship to the window by a catch 11 journaled on the internal surface of the casing.

The said unit comprises four open-ended tracks located on the side of the unit adjacent the window, arranged in superimposed parallel relationship, and so inclined to the horizontal that they slope downwardly from the hinged edge to the free edge of the unit.

Each track (see Figure 4) consists of a base (12, 13, 14 and 15) made of metal or other hard-wearing material, a deep side (16, 17, 18 and 19) having an aperture (20, 21, 22 and 23) therein and extending

along the inner edge of the base and a shallow side (24, 25, 26 and 27) extending along the outer edge of the base adjacent the window. All the sides are inclined at the same angle out of the vertical so that they are parallel to one another, the upper surface of the bases being disposed at right angles to the adjacent surfaces of the complementary sides. The deep side of each of the three lower tracks extends upwardly behind the next adjacent upper track and is spaced therefrom by filler pieces 28. The deep side of the uppermost track extends behind and is parallel to a front plate 29 and is spaced therefrom by filler pieces 30, whereas a back plate 31 is located behind and is parallel to the deep side of the lowermost track and is spaced therefrom by filler pieces 32.

The lower edges of the front plate 29 and each of the deep sides 16, 17 and 18, are so located relatively to the crowns of the four tracks, that a shallow channel 33 is formed along the entire length of each of the said crowns.

The filler pieces 28, 30 and 32 are of such shape and are so arranged that an open-ended passage 34 (see Figures 2 and 4) extends downwardly from the top of the unit to the crown of the uppermost track between the aperture 20 and the lower end of the track; a passage 35 into which the aperture 20 opens, is formed between the overlapping portion of the deep sides 16 and 17, the said passage 35 terminating above on opening 36 formed in the crown of the second track between the opening 21 in the deep side 17 and the lower end of the said second track; a similar passage 37, extending from the aperture 21 to an opening 38 in the crown of the third track, is formed between the overlapping portion of the deep sides 17 and 18; another similar passage 39, extending from the aperture 22 to an opening 40 in the crown of the lowermost track, is formed between the overlapping portions of the deep sides 18 and 19; and a passage 41 and a discharge chute are formed between the deep side 19 and back plate 31, the passage 41 extending from the aperture 23 to the upper end of the said discharge chute and the latter opening at its other end into the tray 9.

The bases are provided with bolts 43 which extend through bolt holes in deep track sides; these bolts are engaged, on the back or inside of the unit, by wing nuts 44 whereby the said bases are detachably clamped in position so that they can be removed for cleaning or maintenance purposes. To maintain the bases in their relative parallel relationship, the ends of each base are supported by fixed pins (not

shown) extending from the complementary deep side.

Where longitudinal adjustment of the bases is required, to vary the relative positions between the higher base ends and the apertures in the deep sides, the bolt holes may be elongated as at 45 and the base-supporting pins may be located in elongated pockets (also not shown) in the undersides of the bases.

The lower ends of the deep sides of the tracks are formed with pockets or recesses 46 to enable striker pins 47 to project inwardly of the lower ends of the track bases for impelling coins or other circular articles along the tracks.

The said tracks are rigidly assembled by battens 48 upon one edge of a carrier plate 49 in such a manner that the higher ends of the inclined tracks open into the space between the said carrier plate and the window 2. The face of the carrier plate visible through the window may have instructions and/or advertising matter printed thereon or applied thereto.

The component parts of the track unit, with the exception of the bases 12, 13, 14 and 15, may be produced from ply-wood or any other suitable material, and may be assembled together by adhesives and/or screws in any desired manner. Alternatively the unit may be built up from a number of mouldings produced from a hard setting thermoplastic or like substance.

A chute 50, suspended within the upper part of the casing and preferably embodying suitable means for rejecting coins or other circular articles having other than a predetermined diameter, extends from the coin slot 6 to the top of the track unit; an opening 51 is formed in the base of the said chute vertically above and in close proximity to the open upper end of the passage 34 between the front plate 29 and the deep track side 16. Thus any coin of a predetermined diameter, when passed through the slot 6 travels edgewise along the chute 50, through the opening 51 and passage 34, into the uppermost track. When the coin enters the track, it falls edgewise on to the base 12 and then rolls down the latter to the lower and open end of the track. Wire fingers 52 are adjustably secured within the casing 1 and are so shaped that the free end of one of the said wires extends behind the lower open end of each track; the fingers thus serve as stops for preventing the coin rolling beyond the lower ends of the said tracks.

A striker 53 is suspended from a roof of the casing 1 and the striker pins 47 are so mounted thereon that one of the said pins is adapted to extend through the pocket 46 of each track and across the

lower end of the latter. The striker is provided with a depending metal arm 54 which is urged by the spring 55 against a roller 56 carried upon a crank 57 of the operating handle 5. Normally the spring retains the striker and operating handle in the position in which the pins 47 are located in the track pockets 46.

At the bottom of the space between the carrier plate 49 and the window 2, a rigid inclined deflector plate 58 is provided so that when a coin is projected (as hereinafter described) beyond the upper end of any of the tracks, into the said space, it falls upon the said deflector plate into the bottom of the casing.

As shown in Figures 1 and 2, the apertures 20, 21 and 22 in the deep track sides, are located at varying distances from the upper open ends of the complementary tracks, whereas the apertures 22 and 23 are equidistant from the said ends. In the latter case, however, the base 15 of the lowermost track is preferably adjusted so that it terminates at a distance beyond the aperture 23 which is less than the distance between the upper end of the base 14 and the complementary aperture 22.

As stated above, when a coin or other circular article is inserted through the slot 6, it passes along the chute 50, through the opening 51, along the passage 34, into the uppermost track. The coin falls edgewise into this track and its edge strikes the base 12. Hence as the track surface is arranged perpendicularly to the inclined surfaces of the track side, it tends to cause the coin to lean inwardly of the casing against the deep side 16; however, even if the coin should tend to lean in the opposite direction towards the window 2, it cannot fall from the track over the shallower side 24 because its upper edge is located within the channel in the crown of the track and would impact the depending lower edge of the front plate 29. Consequently, the coin automatically rolls edgewise down the inclined base to the lower end of the track and is brought to a halt by impact with the striker pin 47 extending across the said lower track end.

By rotating the operating handle 5 through any desired angle up to 180°, a player may displace the striker 53 angularly through a corresponding distance by the crank 57 and roller 56 against the action of the spring 55. This angular movement further stresses the spring and moves the striker pin which extends across the uppermost track, away from the coin, the latter then being prevented from falling from the track by the free end of the complementary finger 52. Upon releasing the operating handle, the spring automatically returns the striker to its

initial position, hence the said striker pin imparts a sudden blow to the edge of the coin and drives the latter upwardly of the track. The distance through which the coin travels under this blow is dependent upon the angular movement of the striker because the greater the angular movement, the more the spring is stressed and the greater is the blow imparted to the coin by the striker pin. If the blow is insufficient, the coin does not reach the aperture 20 and rolls back against the striker pin; if the blow is too hard the coin passes beyond the aperture and may be projected through the open upper end of the uppermost track into the space between the carrier plate 49 and the window 2, when it falls on to the deflector plate 58 into the bottom of the case when it is lost to the player. Again the blow, whilst not being sufficiently hard to project the coin from the track, may be hard enough to project it so far past the aperture 20 that, when reaching the aperture on its return movement under gravity, it has gained sufficient momentum to prevent it from deviating out of its straight course as it passes the said aperture; in these circumstances the coin again rolls back to the lower track end. However, if the blow is of the desired strength, the coin passes through the aperture 20 into the passage 35, rolls down the latter and falls through the opening 36 into the second or next lower track, and then rolls along the base 13 of the said lower track into contact with the complementary striker pin 47.

Whereupon by so rotating the operating handle as to cause a further blow of the desired strength to be imparted to the coin, the latter may be made to pass through the aperture 21 along the passage 37, and through the opening 38 into the third or next lower track. Another blow of the desired strength causes the coin to pass through the aperture 22, along the passage 39 and through the opening 40 into the bottom track, from which it may be caused to pass, by a fourth blow of the desired strength, through the aperture 23, along the passage 41, and down the discharge chute 42 into the tray 9. Since the said tray opens to the outside of the casing the player recovers his coin.

Since the distance of the aperture 21 from the open upper end of the second track is less than the distance of the aperture 20 from the open upper end of the uppermost track, it will be appreciated that greater skill is required to make the coin pass through the aperture 21, than through the aperture 20; also the possibility of projecting the coin beyond the end of the second track is greater than when driving the said coin up the upper-

most track. Similarly, still greater skill is required to make the coin pass through the aperture 22 without projecting the said coin beyond the third track. Finally although the apertures 22 and 23 are equidistant from their respective upper track ends, the base 15 of the lowest track is shorter than the bases 12, 13, and 14, hence the maximum amount of skill is required to make the coin pass through the aperture 23 and be recovered by the player.

The machine may be used by a single player as an amusement device; in these circumstances the player first endeavours to recover his coin after insertion through the slot 6, then, as his skill increases, endeavours to reduce to a minimum the number of blows he has to impart to the coin to recover same.

Alternatively, the machine may be used by two or more players as a competitive device, the winner being the player who recovers his coin with the fewest number of blows imparted to the coin.

Whereas the depth of the aperture in each of the deep inclined track sides must be at least sufficient to enable a coin to pass therethrough edgewise, the aperture may be of any desired width greater than the radius of the coin. Consequently, the strength of the blow required to cause the coin to pass through the aperture must be such that a reversal of the direction of travel occurs when at least that half of the coin which is adjacent the lower end of the track, overlaps the aperture.

The edge of each aperture furthest from the lower end of the complementary track, may be formed on a radius so as to facilitate the entrance of the coin into the aperture and so as to decrease the possibility of the said edge obstructing the blow-driven travel of a coin up the said track.

Whilst the machine described and shown, comprises four parallel inclined tracks, it will be appreciated that any number of inclined tracks may be provided and these need not necessarily be arranged in parallel relationship provided that a coin may pass from one to the other in sequence from a coin inlet to a discharge tray or the like. Also any other suitable form of coin-striking mechanism may be provided.

The striker, may be associated with mechanism, visible through the window, for counting the number of blows imparted to a coin from the time it is fed into the uppermost track until it enters the discharge chute or is impelled beyond the open upper end of a track. Also means may be associated with, and be

actuated by, the deflector plate for counting the number of coins falling into the bottom of the casing.

Alternatively, instead of arranging for a coin to be fed through the supply chute to the uppermost track, the machine may include coin actuated mechanism which releases and supplies to the said track a predetermined number of discs which may be driven in succession along the tracks.

Having now particularly described and ascertained the nature of my said invention, and in what manner the same is to be performed, I declare that what I claim is:—

1. An amusement machine comprising a plurality of channel-like tracks, each of which is inclined to the horizontal and is visible through a window in the front of the machine, the back wall or side of each track being substantially deeper than the front wall or side thereof and being provided, at a distance from the lower track end, with an aperture which opens into a passage located behind the said back wall or side to establish communication, in the case of each track except the lowest, between the track and a lower track, and in the case of the lowest track, with a discharge chute, and a manually actuated hammer or equivalent device being provided at the lower end of each track so that when a coin or other circular article is fed edgewise to any track, it rolls to the lower end of the latter from where it is adapted to be impelled upwardly of the track towards the aperture in the back wall or side by the complementary hammer or equivalent device.

2. An amusement machine as claimed in Claim 1 wherein the upper end of each track opens into a space formed internally of the machine and extending into the bottom of the latter so that, when too great a blow is imparted to the circular coin or article, the latter is projected beyond the track into the said space and falls to the bottom of the machine.

3. An amusement machine as claimed in Claim 1, wherein the deep side of each track is inclined out of the vertical rearwardly of the track, the coin-supporting surface of the base of the track being disposed at right angles, or substantially at right angles, to the said deep side so that when a coin or other circular article is fed edgewise to the track it tends to tilt against and travel along the front face of the said deep side.

4. An amusement machine as claimed in Claims 1 and 3 wherein the floor of the passage behind the deep back wall or side of each track is also inclined to the horizontal and has an opening therein, the said opening being formed between the side

aperture and the lower end of the passage and being located above and forwardly of the front face of the deep side of the next lower track so that when a coin or other circular article is caused to pass edgewise through the aperture in any track side it rolls automatically along the corresponding passage to and through the opening in the passage floor, into the next lower track, the edgewise disposition of the coin or article being maintained by the rearward inclination of the back wall or side of the said lower track.

5. An amusement machine as claimed in the preceding claims, wherein several tracks and passageways are built up as a single unit which is located in a casing behind the window in the latter, the said casing being provided with a coin slot and a chute extending from the slot to an opening in the crown of the uppermost track.

6. An amusement machine as claimed in Claim 5 wherein the track unit is hinged within the casing so that it is adapted to be swung away from the window for cleaning and/or maintenance purposes.

7. An amusement device as claimed in the preceding claims, comprising a plurality of inclined tracks wherein the distances of the apertures in the deep track sides, from the upper ends of their respective tracks varies in each track.

8. An amusement device as claimed in Claim 1, wherein each track comprises a metal or like hard wearing base which is detachably assembled in position.

9. An amusement device as claimed in Claim 1, wherein the base of each track is longitudinally adjustable relatively to the deep side for varying the distance between the aperture and the upper end of the said base.

10. An amusement device constructed, arranged and adapted to operate substantially as herein described with reference to the accompanying drawings.

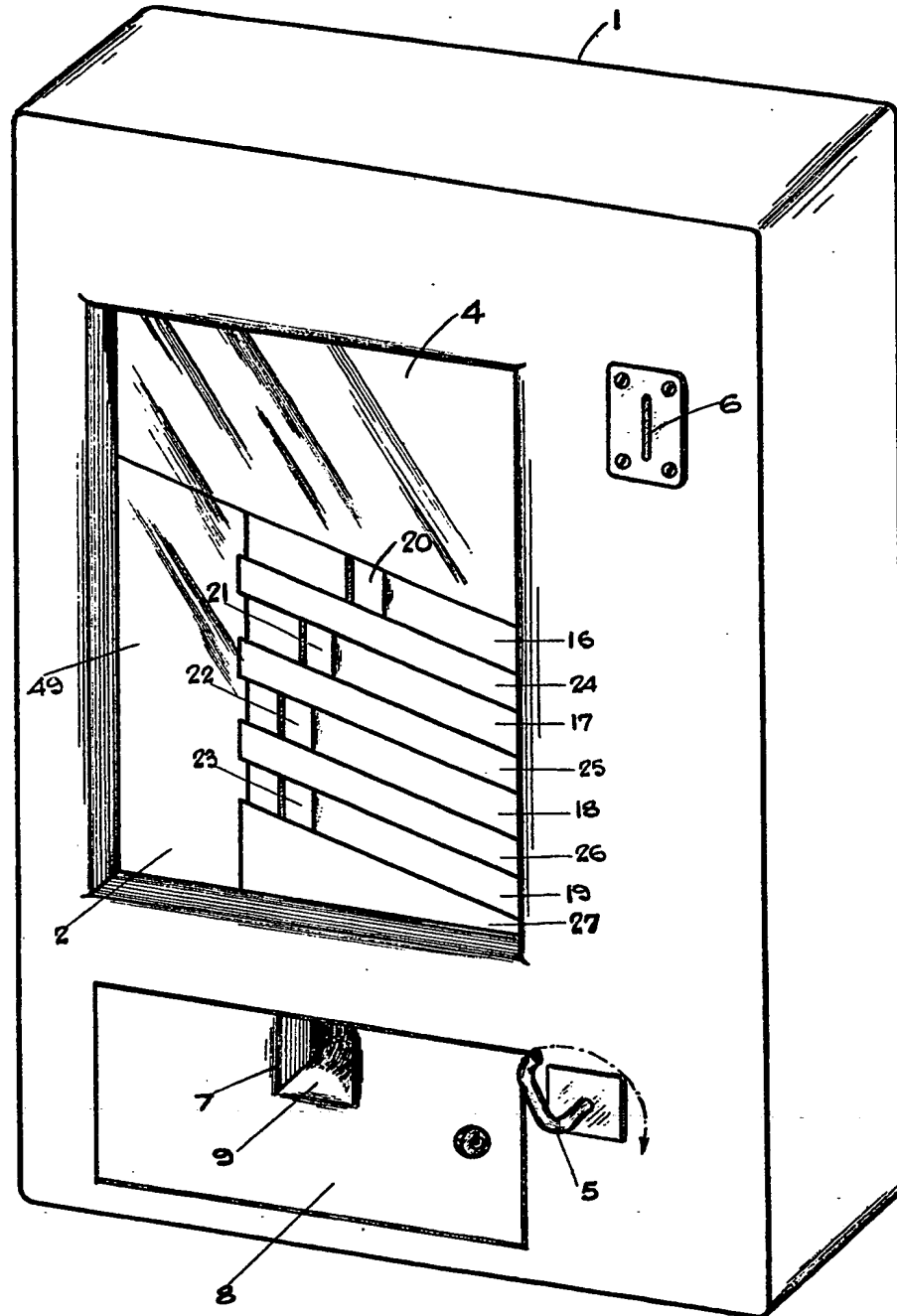
Dated the 23rd day of November, 1945.

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Leamington Spa: Printed for His Majesty's Stationery Office by the Courier Press.—1949.  
Published at The Patent Office, 25, Southampton Buildings, London, W.C.2, from which copies, price 2s. 0d. each (inland) 2s. 1d. (abroad) may be obtained.

FIG. 1.

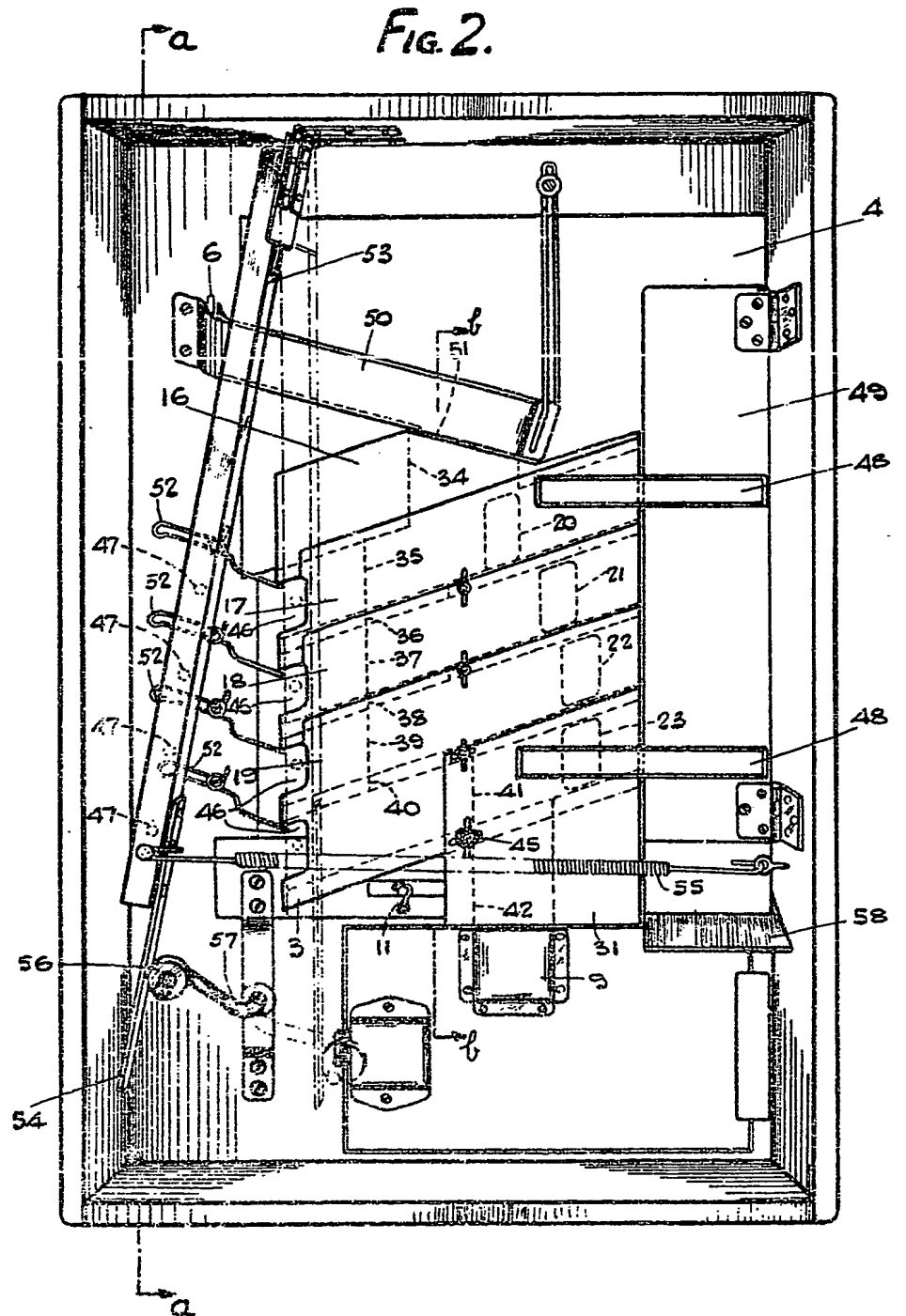
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[This Drawing is a reproduction of the Original on a reduced scale.]



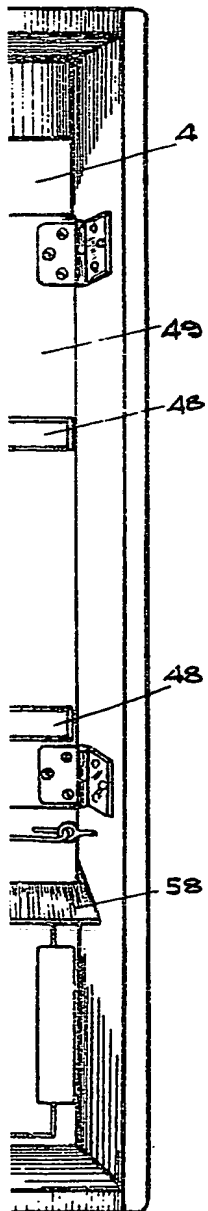


Fig. 3.

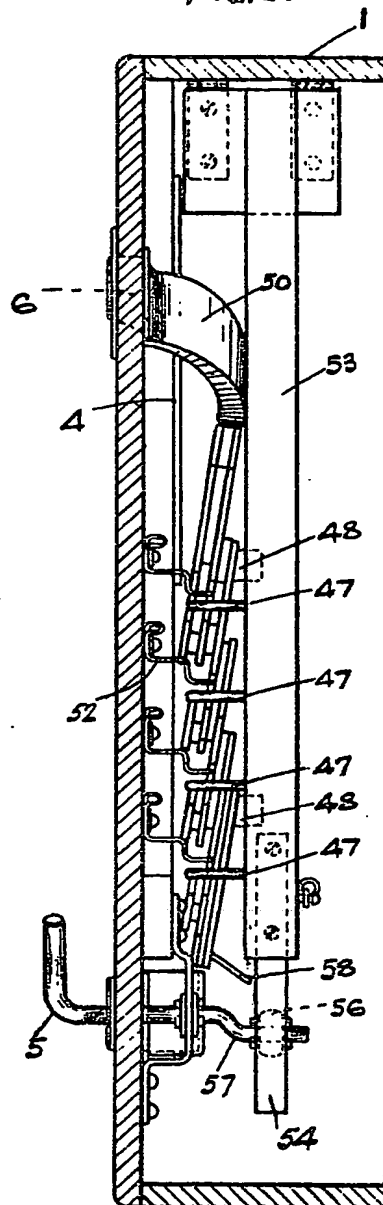
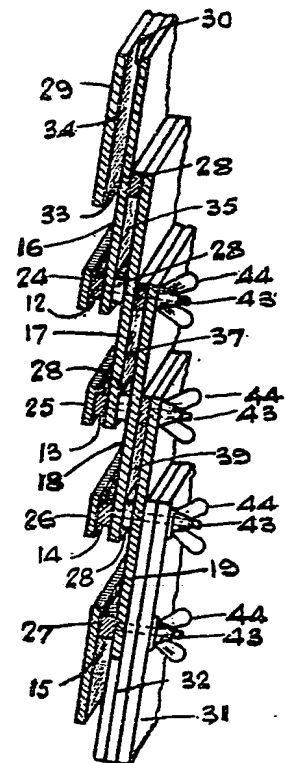


FIG. 4.



620477 COMPLETE SPECIFICATION

SHEET 2

3 SHEETS

SHEET 3

Fig. 2.

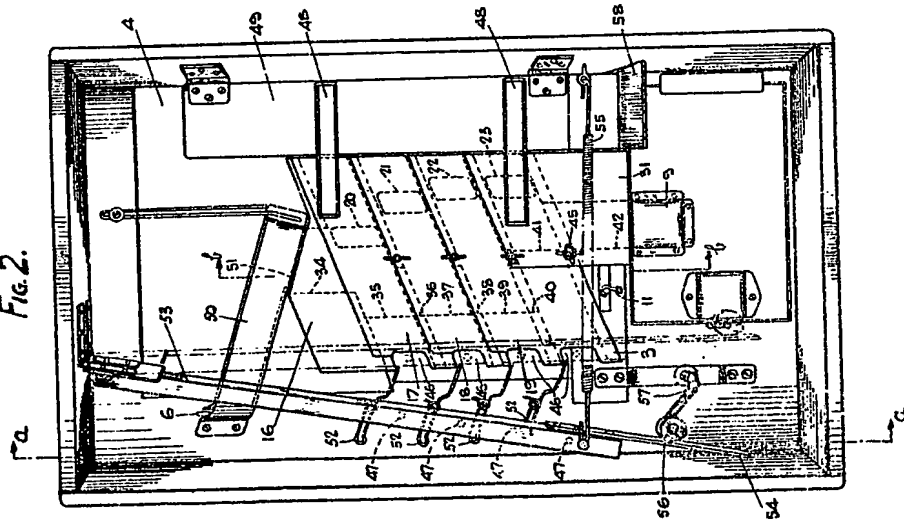


Fig. 3.

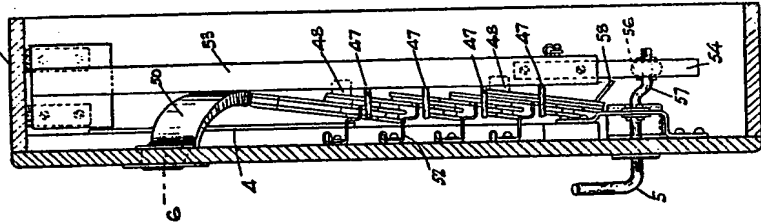
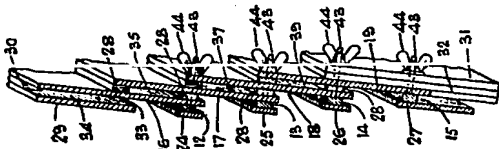


Fig. 4.



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